

REMARKS

Claims 1, 2, and 4-39 are pending in the present application.

The rejection of Claims 1-19 under 35 U.S.C. §102(b) over Fourment et al (US 3, 784, 396), is obviated in part by amendment and traversed in part.

Fourment et al disclose a powder based on an ethylene maleic anhydride copolymer for the treatment of the surface of a material (column 1, lines 5-7). The powder is a statistical copolymer of ethylene and maleic anhydride, having a particle size of 0.5 μ and 400 μ and possessing on the surface of its particles, at least one crosslinking agent for the copolymer which contains as reactive groups, one, two, three or four alcohol groups and at least one amino or amido group (column 1, lines 10-16). According to Fourment et al these mixtures mentioned are useful for the treatment of the surface of a material (column 1, lines 8-9). Further, the mixtures of Fourment et al make it possible to produce metal coatings which adhere very strongly (column 4, lines 59-60). The coatings, according to Fourment et al, have an exceptional adhesion to glass (column 6, lines 22-24) and it is possible to prepare textile coatings with said mixtures (column 7, line 52). Further, the mixtures according to Fourment et al are useful for increasing the tensile strength and tear strength of papers and cardboards (column 9, lines 50-51), and it is possible to effect the agglomeration of various particles by use of the mixtures mentioned above (column 9, lines 55-56).

In the presently claimed invention a pulverulent formaldehyde-free binder composition is claimed, comprising 40 % by weight to 60 % by weight, based on the binder composition, of a pulverulent copolymer and 40 % by weight to 60 % by weight, based on the binder composition, of at least one pulverulent crosslinker. The weight ratio of copolymer and crosslinker used in the pulverulent binder compositions according to the

present invention is therefore roughly 1:1 (more specifically the ration ranges from 2:3 to 3:2), as can also be seen from the examples in the present invention (see page 11, lines 5-19).

With the foregoing in mind, Applicants submit that the binder compositions of the present invention differs from the compositions as disclosed in Fourment et al in the ratio of copolymer to crosslinker. In column 1, lines 34-40 and column 3, lines 3-8, Fourment et al define the composition of the ethylene maleic anhydride copolymer as containing from 80-99 parts by weight of units originating from ethylene and from 1-20 parts by weight of units originating from maleic anhydride (i.e., 0.5-20wt% of maleic anhydride derived units). Based on this composition, Fourment et al disclose that the content of crosslinker admixed thereto is defined on a mole crosslinker per mole maleic anhydride basis (see Examples).

In Example 2, Fourment et al disclose that the amount of crosslinker (diethanol amine) used in this example is 0.1, 0.25 and 0.5 mol per mol of maleic anhydride in the copolymer employed (column 3, lines 55-57). Further, the maleic anhydride amounts to 2.62 percent of the copolymer (column 3, line 42). In Example 3, 0.5 mol of phenyldiethasolamine as crosslinker are used (column 4, lines 16-7). In Example 4, 0.5 mol of N,N'-dihydroxyethyidiethylentriamine as crosslinker were used per mol of anhydride in the copolymer (column 4, lines 30-31). In Example 5, 0.5 mol of oleylpentaethanolamide as crosslinker were used per mol of maleic anhydride in the copolymer. The remaining Examples demonstrate a similar trend.

In view of the foregoing, Applicants note submit that it is clear that the binder compositions of the present invention differs from the compositions as disclosed in Fourment et al in that the ratio of copolymer to crosslinker disclosed and exemplified in Fourment et al vastly exceeds that presently claimed. More specifically, using the aforementioned Example 1 from Fourment et al as an example, the diethanolamine (105.14 g/mol) crosslinker is

present in an amount of 0.1, 0.25 and 0.5 mol per mol of maleic anhydride (98.06 g/mol). However, the maleic anhydride only amounts to 2.62 weight percent of the copolymer. Therefore, if one assumes that the copolymer has a mass of 100g, the maleic anhydride would account for 2.62g of the copolymers total mass, which is equal to 0.0267 moles. As such, the diethanolamine amounts to 0.0133 moles, which is 1.40g. Accordingly, in this illustration the total mass of the binder composition would be 101.4g of which 1.4wt% is the crosslinker and the remaining 98.6wt% is the copolymer.

In view of the foregoing, Applicants submit that the presently claimed invention is not anticipated by Fourment et al. As such, Applicants request withdrawal of this ground of rejection.

The rejections of: (a) Claims 1-17 under 35 U.S.C. §103(a); and (b) Claims 18 and 19 under 35 U.S.C. §102(b), each over Ohara et al (US 3, 900, 440) are obviated in part by amendment and traversed in part.

Ohara et al disclose an adhesive composition comprising a mixture of a carboxyl group-containing polymer, a polyvalent metal salt and a compound containing at least two epoxy groups in the molecule is disclosed. Further, an adhesive composition comprising said mixture incorporated in an aqueous latex is disclosed (column 1, lines 3-8). According to column 10, lines 9-28, the adhesive compositions are suitable for formation of plywoods and other articles, the compositions can be used for bonding said articles as well as for claycoating of paper and as coating agents for the use in painting (column 10, lines 24-28). According to the examples in Ohara et al the copolymer is added to a latex and then the crosslinker having at least two epoxy groups per molecule is added. According to Ohara et al, binder compositions are provided, which are applicable even for formation of highly

water-resistant plywoods for outer decoration which can be used outdoors (column 2, lines 12 to 15). For the following reasons, Ohara et al cannot effect the patentability of the presently claimed invention.

In the present invention a pulverulent binder composition is provided, which is used in pulverulent form without addition of a latex. Applicants submit that this difference between the disclosure of Ohara et al (aqueous) and the present invention (pulverulent) and the advantages flowing therefrom are not obvious. Moreover, in view of the results shown in the present examples, even a *prima facie* case of obviousness would be rebutted.

With respect to the present invention, the product resulting from the binding no longer has to be dried as in the case with aqueous binder compositions (page 3, lines 30-33). Furthermore, by using the specific binder compositions of the present invention products are obtained having high mechanical strength and dimensional stability, even under humid conditions. Further, the binder composition according to the present invention exhibits excellent tack under anhydrous application conditions (page 9, lines 5-9). This advantages of the pulverulent binder compositions of the present invention can be clearly seen in examples 1 to 3 of the present invention (see page 11, line 5 to page 12, line 7).

Applicants note that Ohara et al is silent with respect to the aforementioned advantages that are obtained when specific binder compositions are employed as claimed in the presently claimed invention. As such, Applicants submit that Claims 1-17 are not obvious in view of the disclosure of Ohara et al.

With respect to the anticipation rejection of Claims 18 and 19, the Examiner recognizes that the adhesive composition of Ohara et al is not a pulverulent binder composition, which is applied in pulverulent form, but an aqueous binder composition, which is applied in aqueous latex (column 8, lines 52-53). However, the Examiner alleges that the

dried adhesive composition is identical to the pulverulent binder composition of the present invention. Applicants disagree with this assertion by the Examiner.

The binder composition of Ohara et al comprising a carboxyl group containing polymer, preferably a copolymer of an α -olefin with maleic anhydride, more preferably isobutene with maleic anhydride, is used together with an aqueous latex, preferably a styrene-butadiene copolymer (column 6, lines 29-30). Further, an epoxy compound is used as crosslinker. The dried composition according to Ohara et al therefore comprises, in addition to the copolymer of an olefin and a carboxylic acid, the epoxy compound - a latex-copolymer. As is evident from the examples of Ohara et al, the amount of the crosslinker in the dried compositions disclosed therein is therefore less than 40 % by weight to 60 % by weight, based on the binder composition, as claimed in amended Claim 1 of the present invention from which Claims 18 and 19 depend. As such, in contrast to the Examiner's allegation, the presently claimed products are not identical to those of Ohara et al and Claims 18 and 19 are not anticipated thereby.

For the foregoing reasons, Applicants request withdrawal of the rejections over Ohara et al.

The rejection of Claims 1-19 under 35 U.S.C. §112, second paragraph, is obviated by amendment.

Applicants submit that the claims have been amended herein to specifically address the Examiner's points of criticism. In addition, Applicants have amended the claims to more particularly and succinctly define the present invention, as well as to improve the overall clarity of the claims.

Applicants request withdrawal of this ground of rejection.

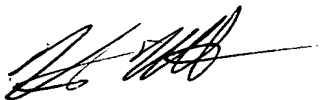
Applicants submit that the present application is now in condition for allowance.

Early notice to this effect is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Norman F. Oblon

A handwritten signature in black ink, appearing to read 'V. Shier', with a long horizontal flourish extending to the right.

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